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## The Door Jamb

This is a continuation-in-part of application Serial No. 08/936,176 filed September 24, 1997. <sup>now abandoned</sup> Priority of the prior application is claimed pursuant to 35 USC § 120.

### FIELD OF THE INVENTION:

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The present invention relates to door structures for residential homes and more particularly to door jambs for homes.

### BACKGROUND OF THE INVENTION:

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Thresholds and entry ways have been a significant part of residential homes since the day of the cave man. History indicates that a stone was rolled in front of an entry way in early years to protect the inhabitants from the outside. At one time, animal skins served as an easily operable closure for the residence. Still later, solid doors mounted on hinges were invented. Door structures have remained rather consistent in structure for the past several hundred years.

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Over the years the structure of the residence has changed. Early man lived in a cave. Constructed residences also have changed over the years. Early homes were made of weather resistant material, e.g., stones, one piled upon another. Later homes were made of wood that required surface protection such as painting. In recent years low maintenance, e.g., weather resistant material has been used in home sidings. These sidings have generally been vinyl siding. With this recent change to vinyl siding, the door jambs have remained of prefabricated wood structure.

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Generally the door structure has included a panel mounted on two or more hinges. The door panel and the supporting hinges are mounted within a casement

surrounding the opening in the residence. The door panel has been constructed of a variety of materials such as fancy carved wood, light weight hollow core wood paneling, as well as, impenetrable steel.

The structure surrounding the opening is typically referred to as a door jamb.

5 The door jamb has a threshold which is the structure extending across the bottom side of the opening, and a pair of upright side jambs and a head jamb which are mounted in a rough opening. The rough opening typically is defined by a floor structure at the bottom, a pair of up right dimension lumber supports, i.e., 2x4s at each side of the rough opening and a header across the upper portion of the rough opening. The rough opening will usually include a wall board adjacent to the opening on the inner surface and outside sheeting and perhaps finish siding on the outer side of the rough opening.

A problem has existed in that door jambs have been of wood construction and thus not weather resistant. Attempts have been made to improve the weather resistance of the door jamb by coating the exposed wood door jambs with paint and/or a vinyl or aluminum coating. This has only been partially successful. The paint tends to deteriorate in the weather and the vinyl or aluminum coating tends to separate from the wood leaving the wood exposed to the weather deterioration.

Another problem has commonly been encountered in building residential homes due to variations in the thickness of the wall defining the rough opening. The thickness of the wall depends on the materials used in the construction. For example, the inner wall may be 1/2 inch dry wall, 5/8 inch dry wall or 5/8 inch dry wall plus 1/4

inch wood paneling. The structural lumber used in the wall may be what is commonly referred to as construction lumber e.g. 2/4s or 2/6s. The outer wall structure may be 5/8 inch sheeting, 1 inch wood sheeting, 5/8 inch plywood sheeting, 1/2 inch plywood sheeting or sheeting of other thicknesses. In addition, the outer siding or finish material may be of various thicknesses. For example: A quarter inch asphalt siding may be used, alternatively, half inch wood board siding may be present. The most popular siding today is vinyl siding. The vinyl siding requires minimal care and upkeep. Vinyl siding is made of any of various polymeric materials. In some instances, insulation is provided within the vinyl siding and in other instances, sheets of insulation are provided between the sheeting and the outer siding.

Thus the thickness of the wall structure will vary depending on the materials selected. This has generally required that the door jamb be modified on site after the wall structure has been put in place. While it may have in the past been desirable to have pre-constructed door jambs, often the pre-constructed door jamb has not been of the appropriate dimensions to fit the desired wall structure. This required that door jamb extenders in the form of strips of wood material be used to provide the desired dimension. Alternatively, the door jambs were cut to a narrower dimension, such as on a table saw.

#### **SUMMARY OF THE INVENTION:**

The present invention relates to a pre-constructed door jamb that accommodates/fits walls of various thicknesses. For example: the door jamb may accommodate wall thicknesses between 4 9/16 and 7 1/8 inches in width. The door

jamb is constructed of thin walled extruded vinyl tubular members. The members include a pair of side jambs, e.g. leg jambs, and a head jamb. The side jambs each have an upper end and a lower end. The head jamb has a pair of outer ends for mating with the respective upper end of the side jambs. The lower ends of the side jambs mates with a threshold.

In a preferred embodiment of the present invention, each such jamb member is constructed of three elements, an outer low maintenance element, an intermediate low maintenance element and an inner wooden element. In other words, each jamb member includes a first element that may be disposed towards the outside of the residence; e.g. the outer or low maintenance element, and an inner element or wood element disposed toward the inside of the residence, e.g. structural element. The intermediate low maintenance element serves to interconnect the outer and inner elements.

The outer element may have an outer low maintenance portion that is exposed to the weather and a portion that defines an inwardly extending rectangular structure that frames the outer portion of the doorway. The outer element may be a shaped tubular polymer extrusion. The intermediate element is some what S-shaped including oppositely facing cavities. The inner element may be either a rectangular wooden structure or in some instances a rectangular tubular polymer structure. The rectangular portion of the outer element may fit snugly in the first of the pair of cavities of the intermediate element. The inner element, e.g. rectangular wooden structure may fit snugly in the second of the cavities in the intermediate element. Thus the

intermediate element interconnects the outer element and the inner element of the door jamb.

**IN THE DRAWINGS:**

Figure 1 shows a perspective view of an entryway having the door jamb of the present invention in place as viewed from inside the residence;

Figure 2 shows a view of a present invention taken along the lines of II-II in Figure 1;

Figure 3 shows a sectional view of a portion of the present invention showing how the polymer side jambs and polymer head jamb may be joined using a corner key thereby forming right angles.;

Figure 4 shows an exploded sectional view of one embodiment of the present invention taken along the line IV-IV in Figure 1;

Figure 5 shows a sectional view of the embodiment of Figure 4 in an assembled position;

Figure 6 shows a key for engaging a side jamb and a head jamb;

Figure 7 shows an exploded sectional view of a preferred embodiment of the present invention;

Figure 8 shows a sectional view of the embodiment of Figure 7 in an assembled position;

Figure 9 shows a vertical plan view of the entry way of a residence showing the use of the jamb of Figures 7 and 8;

Figure 10 shows an exploded sectional view of an alternate embodiment of the

present invention;

Figure 11 shows a sectional view of the embodiment of Figure 10 in an assembled position;

Figure 12 shows a sectional view taken along the line XII-XII in Fig. 9;

5 Figure 13 shows sectional view taken along the line XIII-XIII in Figure 9;

Figure 14 shows a drip cap or flashing of the present invention.

**DETAILED DESCRIPTION OF THE PRESENT INVENTION:**

Door Jamb 10 of the present invention is illustrated in Figures 1-5 and includes a pair of upright or side jambs 11 and 12 and a head jamb 13. The door jamb 10 of the present invention may be mounted within the rough opening 16, of a building such as a home or personal residence. The door jamb 10 may be provided with a door 17 mounted on a plurality of hinges 18 and 19. The rough opening 16 and the door 17 may be of conventional construction. The door jamb 10 including the side jambs 11 and 12 and the head jamb 13 may be constructed of material having identical cross sectional shape. Therefore only the cross sectional shape of side jamb 11 will be described in detail.

The door jamb 10 (Figure 4) has a three element construction, namely, an outer element 21, an intermediate element 20 and an inner element 22. Element 21 has an exposed or exterior portion 23 and an elongated portion 24. The exterior portion 23 may include a rear wall 26, a pair of side walls 27, 28 and a outer wall 29. The portion 23 may include an inside wall 30 for strengthening purposes. The wall 29 may be of any desired shape such as stepped or arcuate.

The elongated portion 24 may include an inner wall 31, a pair of side walls 32, 33 and an outer wall 34. The outer element 21 may be extruded in the form of a closed, continuous shaped tube 25. In other words the walls 26, 27, 28, 29, 30, 31, 32, 33 and 34 may be integral with the next adjacent wall thereby forming a tube.

5 The tube 25 may have a plurality of chambers 25a, 25b and 25c.

The intermediate element 20 may be formed by extrusion and includes a pair of oppositely facing cavities 52 and 53 defined by a plurality of walls. Element 20 is constructed of side walls 55 and 56 and an end wall 57 which define cavity 52.

10 Element 20 further includes side wall 58 and end wall 59 which together with side wall 56 define the cavity 53.

15 The structural element 22 may be constructed of any desired material such as wood, typically pine, oak or fir. Alternatively structural element 22 may be a closed extruded tube defined by walls 36, 37, 38, 39. The structural element 22 may have a decorative strip or molding attached thereto. The decorative strip may be molding that is present in conventional door jambs.

## **A PREFERRED EMBODIMENT**

20 A preferred embodiment of the present invention is shown in Figures 7 and 8. The side jamb 111 ( Figures 7 and 8) includes an outer low maintenance element 121, an intermediate low maintenance connecting element 120 and an inner structural element 122.

The outer element 121 may be constructed by extrusion of a polymeric material, such as vinyl in a shape as shown in the cross sectional view of Figure 7 and 8. The

outer low maintenance element 121 consists of an exposed outer low maintenance portion 123 and an elongated portion 124. The outer low maintenance portion 123 may include a rear wall 126, a pair of side walls 127, 128 and an outer wall 129. The wall 129 may be shaped as desired. In some instances the shape will be decorative such as being S-shaped. one or more strengthening walls 127a may be provided which extend between walls 127 and 128. The wall 127 may have a drip cap or flashing slot 127a defined therein for purposes hereinafter described.

The elongated portion 124 may include an inner wall 131, a pair of side walls 132, 133 and an outer wall 134. The wall 132 has a plurality of tooth shaped longitudinal ribs 132a for purposes hereinafter described. The outer element 121 may be extruded in the form of a closed, continuous shaped tube. The walls 126 through 134 each may be integral with the next adjacent wall. In other words, wall 126 is integral along one edge with the adjacent edge of wall 127 which in turn is integral along one edge with the adjacent edge of wall 129 and so on.

The structural element 122 may be formed from a wood board such as pine, oak or fir. The element 122 desirably is a nominal one inch board having a notch 122a for purposes hereinafter described.

The intermediate element 120 may be formed by extrusion and includes a pair of oppositely facing cavities 152 and 153 defined by a plurality of walls, 155, 156, 158 and 159. In other words, element 120 is constructed of side walls 155, 156 and an outer or end wall 157 which define cavity 152. Element 120 further includes side wall 158 and end wall 159 which together with side wall 156 define the cavity 153. The



wall 155 includes a projection 155a for purposes described hereinafter. The wall 156 includes a plurality of tooth shaped longitudinal projections or ridges 156a for purposes hereinafter described.

The intermediate element 120 includes a tubular portion 160 of square cross section. A tooth or ridge 160a extends from the portion 160 for purposes hereinafter described.

The jamb 111 may be assembled as shown in Figure 7 by inserting the elongated portion 124 of element 121 into the cavity 153 of intermediate element 120. The teeth or ridges 132a of portion 124 engage with the teeth 156a of intermediate element 120. The elongated element 124 is inserted to a depth sufficient to provide the desired depth of jamb 11 for the building in which the jamb 11 is being installed. The teeth 132a and 156a serve to lock the elements 120 and 121 in the desired depth. The jamb 111 is further assembled by inserting the element 122 into the cavity 152 until the projection 155a rests in the slot 122a in element 122. The projection serves to lock the element 122 in place with respect to the element 120. A seal 180 may be secured in place trapped against member 122 by tooth or ridge 160a.

#### **USE OF THE PRESENT INVENTION**

The present jamb may be used in any of various door configurations including a single door, patio glass doors, transoms, sidelights and door structures that include two or more doors. The jamb of the present invention is shown in Figure 9 in a door configuration including a single door 117 and a light 168. In the configuration of Figure 9 four jambs 171, 172 and 173 are provided. Jambs 171 and 173 are single

jamb as shown in Figure 12. The jamb 172 is a double jamb as illustrated in Figure 13.

The jamb 171 includes three elements namely outer element 121, intermediate element 120 and inner element 122. The outer element 121 has an exposed low maintenance portion 123 and an elongated portion 124 as described in conjunction with Figures 7 and 8. The intermediate element 120 may include a pair of oppositely facing cavities 152 and 153 defined by a plurality of walls. The structural element 122 may be formed from a wood board such as pine, oak or fir. The elongated portion 124 of outer element 121 is engaged in the cavity 153 of intermediate element 120. The structural element 122 is engaged in the cavity 152. The jamb 171 has weather stripping 181 (Figure 12) held in place by entrapment between intermediate element 120 and structural element 122. The tooth or ridge 160a holds the weather stripping or seal 181 in place. The weather stripping 181 serves as a seal between the jamb 171 and the window or door 117.

The jamb 172 (Figures 9 and 13) is as described with respect to the jamb 111 except two jambs are placed back to back to provide a first finished surface facing toward the door 117 and a second finished surface facing toward the side light 117a. Referring to Figure 9 it is noted that a first jamb 112a faces to the left, e.g., toward the door and a second jamb 112b faces to the right, e.g., toward the side light 117a. The jamb 112a includes three elements namely outer element 121a, intermediate element 120a and inner element 122a. The outer element 121a has a low maintenance outer portion 123a and an elongated portion 124a as described in conjunction with Figures 7

and 8. The intermediate element 120a may include a pair of oppositely facing cavities 152a and 153a defined by a plurality of walls. The structural element 122a may be formed from a wood board such as pine, oak or fir. The elongated portion 124a of outer element 121a is engaged in the cavity 152a of intermediate element 120a. The structural element 122a is engaged in the cavity 153a. The jamb 112b likewise includes three elements namely outer element 121b, intermediate element 120b and inner element 122b. The outer element 121b has an exposed low maintenance portion 123b and an elongated portion 124b as described in conjunction with Figures 7 and 8. The intermediate element 120b may include a pair of oppositely facing cavities 152b and 153b defined by a plurality of walls. The structural element 122b may be formed from a wood board such as pine, oak or fir. The elongated portion 124b of outer element 121b is engaged in the cavity 152b of intermediate element 120b. The structural element 122b is engaged in the cavity 153b. A cap 191 is mounted over the outer portion 124a and 124b to seal the space therebetween and secure the jambs 112a and 112b together. The outer portions 124a and 124b may each include a projection 124a' and 124b' that engages a slot 124a" and 124b" in the cap 191 to secure the cap 191 in place.

The jamb 171 may include a flashing 192 that extends along the edge of the jamb 171 and is engaged with the framing of the rough opening in the home. The flashing 192 is illustrated in Figure 14. The flashing is an elongated I-shaped member including a flange 192a and 192b. The flange 192a lies in snug engagement with the outer portion 124. The flange 192b lies in snug engagement with the exterior surface

of the home, e.g., the exterior sheeting. The flashing 192 has a projection 192c that extends into the slot 127a in wall 127.

### ALTERNATE EMBODIMENT

5 The side jamb 211 ( Figures 10 and 11) includes an exterior decorative element, e.g., first element 221 and an inner structural element 222. The first element 221 may be constructed by extrusion of a polymeric material, such as vinyl in a shape as shown in the cross sectional view of Figure 10. The decorative element 221 has an exposed portion 223 and an elongated portion 224. The exposed portion 223 may include a rear wall 226, a pair of side walls 227, 228 and a outer shaped wall 229. The shaped wall 229 is shown as being S-shaped; however, the wall 229 may be of any desired conformation, such as angular or semi-circular. The elongated portion 224 may include an inner wall 231, a pair of side walls 232, 233 and an outer wall 234. The exterior element 221 may be extruded in the form of a closed, continuous shaped tube 220. The walls 226, 227, 228, 229, 231, 232, 233 and 234 may be integral with the next adjacent wall. In other words, wall 226 is integral along one edge with the adjacent edge of wall 227 which in turn is integral along one edge with the adjacent edge of wall 229 and so on.

10 The structural element 222 may be an extruded tube having a closed tube portion 230 defined by walls 236, 237, 238 and 239 and an open tube portion 235 defined by the walls 236, 241 and 242. The cavity 240 formed by the walls 236, 241 and 242 functions as a track into which the elongated portion 224 may be placed as hereinafter described. The cavity or track 240 desirably has dimensions that snugly

receive the elongated portion 224 of first element 221.

The second element 222 (Figures 10 and 11) may be generally rectangular in cross sectional shape with an extended rectangular portion. The element 222 may have a depth suitable to conform the desired range of home wall thickness in combination with element 221.

The engagement between elements 221 and 222 is illustrated in Figure 11. The wall 226 abuts the outer surface 261 of the siding of the building in which the door jamb is being mounted. In other words, the elongated portion 224 of element 222 is partially disposed within the track 240 of element 222. Element 221 is adjusted in such track 238 to provide the desired depth dimension for the door jamb. The portion 224 enters the cavity 240 to a sufficient depth to place end wall 239 in alignment with the surface 262 of the inside wall materials, e.g., dry wall in the home as shown in Figure 11.

The elements 221 and 222 may be suitably secured together such as by nails or screws 246 which engage the framing dimensional lumber, e.g., 2x4's to secure the relationship once the door jamb is on location and has been put in place in the rough opening. The element 222 is moved to provide the desired thickness for the jamb and nails or screws 246 are inserted through element 222 into element 221. The door jamb 10 may be suitably secured to the dimension lumber, e.g., 2x4 such as by the nails or screws 246.